

The Effect of Suspense on Enjoyment Following a Desirable Outcome:

The Mediating Role of Relief

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Although endemic to many forms of media entertainment, suspense represents a paradox for enjoyment because it is experienced as an aversive state. Three studies are presented across two media contexts demonstrating how outcomes to suspenseful episodes affect viewers' relief. Study 1 shows that relief is elicited only when a film's outcome is unambiguously favorable and under such conditions is positively related to enjoyment. No such relationship was found given an ambiguous outcome. Study 1 provides evidence that relief is distinct from other affective responses (i.e., positive and negative affect, surprise) that may be present following suspense. Studies 2 and 3 use competitive contests as a context and provide evidence that relief mediates the effect of suspense on enjoyment. Study 2 shows that the previously positive effects of suspense and expectation disconfirmation on enjoyment are obviated in the presence of relief. Study 3 varies suspense in real time across 14 simulated races. Also manipulated are affective dispositions toward the racers and race outcome. The results reveal that relief mediates the effect of suspense on enjoyment, but only when the outcome favors a preferred competitor. The research enhances our understanding of the intertwining of cognition and affect in the enjoyment of suspense.

Suspense represents a paradox for purposes of enjoyment because it is experienced as an unpleasant state. The unpleasantness is attributable to viewers' empathetic distress in response to the possibility that an unfavorable outcome will befall a liked character. It is this conflict between the desire to see one outcome over another and a belief that such a prospect while possible is highly unlikely that creates suspense (Carroll, 1996). Strong psychological attachments to a protagonist, be it an individual or a group, and disapproval of the antagonist are responsible for the degree of unpleasantness experienced during suspense (Raney, 2003a).

Suspense exists in the moments leading up to an outcome, but only when the outcome is uncertain. Once the outcome is known, suspense yields to other affective responses. In particular, Zillmann (1996, p. 208) has posited that the extraordinary relief experienced by viewers following a favorable resolution is a prime motivator for people's willingness to endure suspense. Through a process of excitation transfer, the heightened levels of arousal associated with empathetic distress transfer to relief upon a desirable outcome. Zillmann (1991) explained the resulting enjoyment as an affective "overreaction" (p. 292).

The nature and intensity of an emotion depends on the relationship between some event and a frame of reference (Frijda, 2007). The intensity of relief results not only from the decrease of discomfort once uncertainty has been resolved (c.f., Berlyne, 1960), but also from the disconfirmation of a feared undesirable outcome (Lazarus, 1991; Ortony, Clore, & Collins, 1998). Not only is such a reaction pleasant in its own right, it is also thought to contribute to overall enjoyment (Frijda, 2007; Zillmann, 1996).

Yet, in spite of its importance to understanding why people seek out suspenseful entertainment, virtually no empirical research has been conducted on relief in this context. Accordingly, in three separate studies, we document the effect of outcome uncertainty, pre-

exposure expectations, and affective dispositions on spectators' relief following suspense. We also investigate the relationship between relief and enjoyment, as well as the ability of relief to mediate the direct effect of suspense on enjoyment.

### Theoretical Background

Suspense is defined as “a noxious affective reaction that characteristically derives from the respondents' acute, fearful apprehension about deplorable events that threaten liked protagonists, this apprehension being mediated by high but not complete subjective certainty about the occurrence of the anticipated deplorable events” (Zillmann, 1996, p. 208). Central to this definition is the intertwining of cognition and affect in the creation of suspense. In particular, cognition in the form of affective dispositions toward the character(s) determines what constitutes a desirable outcome to a suspense episode. Viewers hope for favorable (unfavorable) outcomes for liked (disliked) characters and fear for favorable (unfavorable) outcomes for disliked (liked) characters.

Affective dispositions toward characters underlie viewers' empathetic distress such that events threatening the prospects of seeing a desirable outcome enhance suspense by increasing fearful apprehensions about how things might ultimately turn out. They are created in fiction through character development and plot, whereas in sporting events they rely on relatively stable psychological attachments to teams and athletes that have been built up over many years. Such dispositions cause spectators to interpret what is arguably objective game information in a consistently biased manner that favors a preferred team and disfavors an opponent (Hastorf & Cantril, 1954; LaLonde, Moghaddam, & Taylor, 1987; Madrigal, 2008).

The other core ingredient of suspense is uncertainty over how the episode will end. Outcome uncertainty fosters viewer interest and engagement. Interestingly, suspense is not

maximized when there is a 50/50 chance of seeing a preferred outcome. Instead, maximum suspense occurs just before a viewer comes to the conclusion that the negative outcome they fear will in fact occur (Comisky & Bryant, 1982). In other words, suspense increases as the prospects of seeing a desirable outcome decrease (Carroll, 1996).

Beginning with Berlyne's (1960) arousal jag theory, the elimination of outcome uncertainty has been considered to be a source of pleasure. However, Berlyne's theory was described largely as an autonomic process that simply returns the individual back to a neutral state. As such, it fails to account for the affective overreaction that follows a highly suspenseful episode that ends well. In contrast, Zillmann's (see 1996 for a review) excitation transfer theory views the switch from dysphoria to euphoria as a cognitive process. He argued that heightened levels of empathetic distress create residual excitation that is transferred to subsequent affective reactions. Relief is thought to play a critical role in this transfer. According to Zillmann (1996), "the experience of relief, despite persisting high levels of arousal, can be expected to invite a cognitive transition to euphoria – the more so, the more noxiousness is removed by the indicated appraisal" (p. 225).

Relief is classified as a disconfirmation (Ortony et al., 1988) or counterfactual (Kahneman & Tversky, 1982) emotion because it is concerned with how close some objective reality is to "what might have been or should have been" (Kahneman & Tversky, 1982, p. 206). It is the disconfirmation of the prospects of some outcome that creates the emotion. Relief arises from the pleasure that is felt when the prospect of an undesirable outcome is disconfirmed. The intensity of disconfirmation emotions is determined by the strength of the emotions experienced in the moments preceding an outcome, which are in turn affected by the desirability of a given outcome and the prospects of that outcome actually transpiring. Frijda (2007) has referred to such prospects as a type of expectation that serves as a frame of reference affecting relief

intensity. Thus, in the case of suspense, relief should be greatest following a desirable outcome for which the subjective certainty of seeing an undesirable outcome is at its maximum because this is when fear is likely to be most active.

From the perspective of appraisal theory, relief is unique in that it depends on an unfolding event and always begins with a negative emotion such that “*a distressing goal incongruent condition has changed for the better or gone away*” (Lazarus, 1991, p. 280, italics in original). The presence of any other negative emotion associated with goal incongruence (e.g., fear, anxiety) is eliminated in the presence of relief. Relief is cognitively the simplest emotion because it depends on only two appraisal dimensions – goal relevance and the removal of goal incongruence. It is this simplicity that distinguishes relief from other positive emotions.

The current research presents three studies focusing on viewers’ relief following suspense. In study 1, we distinguish relief from other affective states that may be active following suspense. We do this by manipulating outcome uncertainty in terms of whether a film’s ending is ambiguous (vs. unambiguous), such that there is no grand resolution to the narrative that favors the protagonist. We then compare viewers’ affective responses, including relief, positive and negative affect, and surprise. We also examine how outcome ambiguity affects the relationship between relief and enjoyment.

In the second study, outcome uncertainty is varied with two different manipulations: competitiveness of the contest and expectations about the likelihood of seeing a desirable outcome. Outcome uncertainty and preexisting affective dispositions in the form of team identification are used to predict relief. In the final study, we examine the effect of outcome uncertainty, affective dispositions, and outcome desirability on relief. Outcome uncertainty is manipulated in real time using a set of simulated races in which suspense is varied based on the

competitiveness of the races. Also manipulated are affective dispositions toward the competitors, which allows us to create both desirable and undesirable outcomes in this study.

Studies 2 and 3 also consider the ability of relief to mediate the effect of suspense on enjoyment. In study 2, we test whether the direct effect of suspense intensity and expectations on enjoyment are mediated by relief. The design used in study 3 allows for a more nuanced test of mediation. Specifically, we test for moderated mediation such that relief is viewed as an affective pathway between suspense intensity and enjoyment, but only in the case of a desirable outcome.

### Study 1

Two purposes underlie our first study. First, we seek to establish the conceptual clarity of relief from other affective responses that may be present following suspense. Second, we consider how relief and its relationship to enjoyment are affected by outcome ambiguity. Both purposes are related in that it would be difficult to establish the conceptual clarity of relief without also considering outcome ambiguity. Thus, we begin by discussing the importance of outcome ambiguity in eliciting relief and then discuss how relief is different from other affective responses experienced following suspense.

Suspense occurs only when there is concern over outcomes that are uncertain (Carroll, 1996; Comisky & Bryant, 1982; Knobloch-Westerwick & Keplinger, 2006, 2007). Thus, the importance of outcome cannot be overlooked. According to Zillmann (1996), “the principal function of the ultimate outcome is to ensure euphoric reactions to the final events” (p. 208). Similarly, appraisal theory suggests that the emotional distress associated with an impending goal incongruent outcome must be resolved favorably in order to experience relief. This implies that relief following suspense will be maximized only when the episode ends in an unambiguously favorable manner (Lazarus, 1991).

Outcomes also matter in the case of surprise. Like relief, surprise is sensitive to favorable outcomes. In contrast to unvalenced surprise (e.g., shock), Ortony et al. (1988) call an unexpected



desirable outcome a “pleasant surprise.” What differs between relief and surprise is the nature of unexpectedness associated with each. Relief is concerned with expectations arising from the prospects of an undesirable outcome, whereas surprise occurs in situations where few if any expectations exist. As a result and in contrast to relief, there is no preference for a particular outcome and, consequently, no heightened levels of empathetic distress. Accordingly, in contrast to relief, no differences are expected in surprise based on outcome ambiguity.

In addition to surprise, relief is also differentiated from positive and negative affect in study 1. In research using the PANAS (Positive and Negative Affect Schedule) scale (Watson, Clark, & Tellegen, 1988), Andrade and Cohen (2007) assessed relief as the change in positive and negative affect between pre- and post-exposure to a horror movie. They found post-exposure increases in positive and negative affect for those who frequently watched horror movies. In contrast, for those who avoided such movies, there was only an increase in post-exposure negative affect while positive affect did not change. The authors concluded that relief did not contribute to enjoyment because the expected increase in positive affect was found only for those who watched horror movies.

Andrade and Cohen’s conclusions questioning the relief-enjoyment hypothesis differ from what would be predicted by appraisal theory (Frijda, 2007; Lazarus, 1991; Ortony et al., 1988) and excitation transfer (Zillmann, 1996). This may be due to three factors. First, although containing elements of suspense, horror movies are not identical to suspense movies. Second, the authors’ operationalization of relief as pre-post shifts in valenced affect is not necessarily analogous to a relief response. Rather than being measured through inference, relief should be measured independently because it represents a “bonafide” positive emotion (Lazarus, 1991, p. 280). That relief occurs following a highly suspenseful episode that ends well does not necessarily eliminate the possibility that changes in valenced affect might also occur. Our point

is simply that relief is not the same as differences in positive and negative affect as measured by the PANAS. Thus, in our first study, we consider the valenced dimensions captured by the PANAS, as well as a discrete measure of relief when comparing pre-post exposure effects.

Finally, by showing relatively brief film clips from a horror movie that did not feature a definitive outcome and by not manipulating affective dispositions toward a protagonist or developing a compelling plot, Andrade and Cohen (2007) did not create a situation where it would be reasonable to expect relief to be activated, even if it was measured as a discrete item. In contrast, a movie featuring a plot in which the prospects of seeing a desirable outcome for the favored protagonist become increasingly remote should elicit relief once such an outcome is unequivocally disconfirmed.

H1: Relief will be greater following (vs. immediately before) a suspense film with an unambiguous desirable outcome compared to an ambiguous outcome.

An assumption of our research is that relief and enjoyment are correlated following a desirable outcome. Enjoyment is defined as a final evaluative attitude of the overall media experience. The enjoyment-as-attitude perspective accounts for both the experience of enjoyment and the end-state assessment of enjoyment (Nabi & Krcmar, 2004, p. 295). Consistent with a tripartite model of attitude, viewers' enjoyment of suspense intertwines cognitive judgments pertaining to preferences for one outcome over another with affective processes arising from the prospect of not seeing that outcome. Given a satisfactory ending, the dysphoria of suspense is thought to yield to an affective overreaction in which the pleasure of relief provides a pathway to an overall assessment of enjoyment (i.e., final attitude; Frijda, 2007; Zillmann, 1996). As suggested in appraisal theory (Lazarus, 1991; Ortony et al., 1988), such a transfer is possible only in the presence of an unambiguously favorable ending.

H2: Relief will be positively correlated with enjoyment following an unambiguous desirable outcome.

## *Method*

### *Participants and Procedure*

Data were collected from 58 college students (64% male) in a computer lab using the procedure outlined in Andrade and Cohen (2007). Participants were told that the study was about film preferences and that they would be asked to provide responses to three different film clips, each from a different genre. After watching an 8-minute documentary about Lake Nakuru in Africa, which was intended to create a common affective baseline, participants viewed one of two versions of a 17-minute suspense film that varied on outcome ambiguity. Twenty-nine respondents each were randomly assigned to each outcome condition. The last film they saw was a 5-minute comedy clip from *Seinfeld*.

Of the three clips, only the suspense film was varied. Two versions featuring the same character and a similar plot were created from a 1971 television movie called *Duel*, the first major film directed by Steven Spielberg. The protagonist, David Mann, is shown driving his red Valiant to an important meeting through long stretches of deserted roads in rural California. Mann passes a 40-ton semi truck driven by a man who is never seen, only to have the truck pass him again, which initiates a deadly game of cat and mouse. In one of the versions, the film's outcome is unambiguous. It shows Mann surviving as the truck plummets over a cliff. The second version features an ambiguous outcome. It shows a scene where Mann hides his car and then waits as the truck passes. After waiting for an hour, Mann resumes his trip. However, the final scene of this version was edited to show the truck emerging from the distance and bearing down on an unsuspecting Mann as the film ends.

### *Measures*

Immediately after both the documentary and the *Duel* film, respondents completed a survey in which all continuous items were measured on seven-point scales.

*Enjoyment.* Enjoyment was assessed using three semantic differential scales: *not at all enjoyable/very enjoyable*, *not at all entertaining/very entertaining*, and *not at all fun/very fun*.

Reliability coefficients for *Duel* and the documentary were, respectively, .96 and .95.

*Relief and surprise.* To disguise the actual intent of the study, respondents were asked to indicate the extent to which the film clip elicited each of the following reactions: relief, disappointment, surprise, frustration, humor, and learning. For each, respondents were initially asked to indicate whether they had the reaction on a dichotomous *yes/no* scale. If affirmative, they subsequently indicated the extent to which they experienced the reaction (*slightly/extremely*). All responses for those answering no were coded 0. Thus, each measure represents a unipolar scale ranging from 0 to 7 (Russell & Carroll, 1999). Items asked in this way represent a conservative assessment because they require participants to first indicate the presence of the reaction and to then assess its intensity on a separate scale, thus reducing the likelihood of a response-set bias.

*PANAS.* Next, respondents completed the 20-item *PANAS (Positive and Negative Affect Schedule)* scale (Watson et al., 1988) which consists of 10 positive and 10 negative emotion terms. Each item was measured on a seven-point scale (*not at all/extremely*). The reliability coefficients for the positive and negative summed scales for the suspense movie were, respectively, .93 and .89; and the reliability estimates for the documentary were, respectively, .94 and .86.

*Suspense.* A single item was used to measure suspense (In your opinion, how suspenseful was this film? *none at all/a great deal*).

*Arousal.* Arousal was included to assess the effectiveness of the manipulations. Three items were used to measure arousal: *exciting/calming*, *arousing/not arousing*; *stimulating/relaxing*. Cronbach alphas for the suspense film and documentary were, respectively, .81 and .92.

*Frequency of watching.* This measure was included to compare our results to those of Andrade and Cohen (2007) who found differences in valenced affect based on frequency of watching horror films. A single item was used to assess how often they watched suspense films (*never/very often*;  $M = 3.67$ ,  $SD = 1.11$ ).

Two other items were included. The first asked whether the respondent had seen any part of the film before (*yes/no*). None of the participants indicated that they had previously seen the film. The final item was a manipulation check asking about the outcome ("*truck went over a cliff*" or "*left unresolved*"). All participants answered correctly.

### *Results*

*Preliminary analysis.* No differences were found based on viewing frequency or sex (all  $ps > .10$ ), therefore our initial analysis examined the equivalence of arousal, enjoyment, and suspense across the two levels of outcome ambiguity. A 2 (Reactions: arousal, enjoyment, suspense)  $\times$  2 (Outcome: ambiguous, unambiguous) mixed model ANOVA was conducted with the former as a repeated measures factor. A significant effect for Reactions was found,  $F(2, 55) = 10.49$ ,  $p < .001$ ,  $\eta_p^2 = .28$ , with enjoyment ( $M = 3.85$ ) resulting in a lower score than either arousal ( $M = 4.58$ ,  $p < .001$ ) or suspense ( $M = 4.52$ ,  $p = .001$ ). However, of greater importance, no difference was found based on Outcome ( $p = .301$ ) or the interaction ( $p = .170$ ). Thus, the results indicate that arousal, suspense, and enjoyment were not significantly different in either version of the suspense movie.

*Overview of the analyses.* A tenet of our conceptual framework for relief following suspense is the need for an unambiguously desirable outcome. We also argue that relief is positively related to enjoyment under such conditions. To determine the conceptual clarity of relief, we must first establish that a discrete measure of relief is sensitive to outcome ambiguity. We therefore begin our analyses by testing the first hypothesis. Next, with the intent to establish

the conceptual clarity of relief, we conduct tests on surprise, and the two valenced dimensions of the PANAS. Finally, we test our second hypothesis.

*Test of H1.* Our first hypothesis stated that relief will be greater after (vs. before) an unambiguously favorable outcome compared to one in which the outcome is not definitive. A 2 (Outcome: ambiguous, unambiguous)  $\times$  2 (Frequency of watching: low, high)  $\times$  2 (Time: pre-*Duel*, post-*Duel*) mixed model was specified with the latter factor being within-subjects. Frequency of watching was included as a covariate based on the results reported by Andrade and Cohen (2007). The factor was formed on the basis of a median split of the frequency of watching item. The results revealed a main effect for Time ( $p < .002$ ) and a difference for Outcome ( $p = .015$ ), but both were qualified by a significant Outcome  $\times$  Time interaction,  $F(1, 54) = 10.87, p = .002, \eta_p^2 = .17$ . As predicted in H1, significantly greater relief was felt following the suspense film ( $M = 2.69, SD = 2.35$ ) than before ( $M = .66, SD = 1.40$ ) in the unambiguous outcome condition ( $p < .001; \eta_p^2 = .29$ ), but not in the ambiguous outcome condition ( $p = .98$ ). No other effects were observed (all  $ps > .37$ ).

*Tests of surprise and valenced affect.* A separate 2 (Outcome: ambiguous, unambiguous)  $\times$  2 (Frequency of watching: low, high)  $\times$  2 (Time: pre-*Duel*, post-*Duel*) mixed model was conducted for each of the three affective responses (surprise, positive and negative affect) with the latter factor specified as within-subjects. The analysis with surprise as the criterion yielded no significant effects or interactions (all  $ps > .35$ ). This indicates that respondents' ratings after watching the Lake Nakuru documentary were statistically equivalent to those following the suspenseful *Duel* film.

Our second analysis featured negative affect as the criterion. Two main effects were found. The first was for Time,  $F(1, 54) = 37.84, p < .001, \eta_p^2 = .41$ , with negative affect increasing following (vs. immediately before) exposure to the *Duel* film ( $M_{\text{pre}} = 1.40, SD = .61; M_{\text{post}} = 2.19, SD = .97$ ). The second main effect was for Outcome,  $F(1, 54) = 4.31, p = .043, \eta_p^2 = .07$ . Those who did not see a

resolution expressed greater negative affect than did those who saw one ( $M_{\text{no resolution}} = 2.44$ ,  $SD = 1.01$ ;  $M_{\text{resolution}} = 1.95$ ,  $SD = .90$ ). No other significant effects were found (all  $ps > .13$ ).

Next, positive affect was included as the criterion in the mixed model analysis. A significant pre-post effect for those who are frequent viewers of suspense movies would replicate the findings of Andrade and Cohen (2007). However, this was not the case as a significant Frequency  $\times$  Time interaction was not found ( $p = .502$ ); nor were any other significant effects observed (all  $ps > .12$ ). Thus, our results indicate that a relief response following an unambiguous outcome is distinct from related responses such as surprise, positive and negative affect. Figure 1 shows the mean scores for pre- and post- *Duel* emotions across the outcome conditions.

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 Insert figure 1 about here  
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*Test of H2.* Our second hypothesis posited that relief and enjoyment will be more highly correlated following an unambiguous (vs. ambiguous) outcome. As expected, the results indicated a significant correlation in the unambiguous condition ( $r = .46$ ,  $p = .013$ ) and a non-significant correlation in the ambiguous condition ( $r = -.05$ ,  $p = .82$ ).<sup>1</sup> Moreover, the difference in coefficients was statistically significant in the predicted direction,  $Z = 1.97$ ,  $p = .024$ .

The results of study 1 provide support for the importance of unambiguously favorable outcomes as a precursor to relief. Relief was also positively related to enjoyment following an unambiguously favorable outcome, but not when the ending was ambiguous. Comparing our results to those of Andrade and Cohen (2007), our results for negative affect were consistent with those of their first study in that pre-*Duel* to post- *Duel* negative affect increased regardless of watching frequency or outcome ambiguity. However, contrary to their study, no pre-post difference for those who frequently

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<sup>1</sup> Enjoyment was also positively correlated with positive affect ( $r = .53$ ,  $p = .003$ ) in the unambiguous condition, but was not significantly correlated with any other variable in either of the outcome conditions (all  $ps > .11$ ).

watched suspense movies was found for positive affect. According to Andrade and Cohen, such a pattern of results would suggest a lack of relief because positive affect did not increase and negative affect did. However, the discrete measure of relief tested in our first hypothesis did show a significant pre-post difference for those exposed to an unambiguously favorable ending. Such an effect demonstrates that relief is independent from positive affect as measured by the PANAS.

### *Discussion*

Study 1 suffered from two limitations. First, a tenet underlying the enjoyment of suspense is the need for a liked protagonist to prevail. In study 1, the driver being chased was the film's de facto protagonist. The plot created a situation where viewers were rooting for him over the larger, more menacing truck. A better manipulation would be one that includes a protagonist for whom viewers have a definite favorable affinity. A second shortcoming was the manipulation of outcome uncertainty in terms of a grand resolution. Rather than just the ending, it would be useful to manipulate outcome uncertainty in relation to momentary suspense during the episode. Both issues are addressed in study 2.

### *Study 2*

In study 2, we again consider how outcome uncertainty predicts relief. Rather than an ambiguous final outcome, outcome uncertainty is manipulated based on game competitiveness and pregame expectations. Using a vignette methodology describing a sporting event, game competitiveness is varied according to the point spread between opponents during the contest. Games closer in score are thought to be more competitive, thus creating greater uncertainty and attendant suspense (Bryant, Rockwell, Owens, & Wesley, 1994). The second uncertainty manipulation involved varying pregame expectations by creating a frame of reference based on past performance (Frijda, 2007). As a disconfirmation emotion, relief relies on the prospect of an



undesirable outcome (Ortony et al., 1988). We anticipate that an unexpected (vs. expected) favorable game outcome will generate greater relief.

In addition to the manipulated factors, two subjective measures are included in order to account for the extent to which each factor was personally experienced. The subjective measure for game competitiveness was perceived suspense. For pregame expectations, viewers' subjective assessment of performance relative to what was expected was assessed in terms of expectation disconfirmation (Frijda, 2007). Assuming a favorable outcome, increased levels of perceived suspense and a better than expected performance should elicit greater relief. Regarding the third hypothesis that follows, effects pertaining to the manipulated factors are accounted for in H3a and H3b, whereas subjective assessments are referenced in H3c and H3d.

H3: Upon a favorable resolution, relief will be greater (a) following a contest with more (vs. less) outcome uncertainty and (b) given an expectation of a loss (vs. win) by the preferred team. Relief will also be positively predicted by (c) perceived suspense and (d) a perception that the team did better than expected.

The fourth hypothesis is identical to H3 except the criterion is now enjoyment rather than relief. Previous research has shown that enjoyment is positively related both to suspense (Bryant, et al., 1994; Gan, Tuggle, Mitrook, Coussement, & Zillmann, 1997; Sapolsky, 1980) and expectation disconfirmation (Madrigal, 1995).

H4: Upon a favorable resolution, enjoyment will be greater (a) following a contest with more (vs. less) outcome uncertainty and (b) given an expectation of a loss (vs. win) by the preferred team. Enjoyment will also be positively predicted by (c) perceived suspense and (d) a perception that the team did better than expected

The fifth hypothesis examines the previously untested contention that relief acts as an affective pathway between suspense intensity and enjoyment (Frijda, 2007; Zillmann, 1996). After accounting for effects attributable to the manipulated factors and covariates (see Methods section below), we consider the extent to which relief mediates the direct effects of the two subjective measures of outcome uncertainty on enjoyment in the hypothesis that follows.

H5: Upon a favorable resolution, relief will mediate the direct positive effect of (a) perceived suspense and (b) expectation disconfirmation on enjoyment.

### *Method*

#### *Participants and Procedure*

Data were collected in a computer lab setting from 108 undergraduates (52% male) who participated in groups of 10 to 14. Upon arriving, they were told the study was designed to better understand how fans react to a sporting event. Outcome uncertainty was manipulated using a 2 (Game Competitiveness: high uncertainty, low uncertainty)  $\times$  2 (Expectation: win, loss) between subjects design. A vignette described a game between the respondents' own university and a conference opponent. Players' real names were used in the narrative to enhance realism. Each version of the vignette yielded a win for the participants' own school.

Respondents first read a consent form and then proceeded to the first part of the vignette. Expectations were manipulated based on information presented about prior meetings between the teams and team talent level. A scale then appeared asking respondents to list the likelihood (0 to 100) that their preferred team would win. Respondents then read the remainder of the vignette in which Game Competitiveness was manipulated. For the low-uncertainty condition, the game was described as a lopsided victory in which the preferred team took an immediate lead and widened

it throughout the game. For those reading the high-uncertainty vignette, game action was described as being highly competitive with the preferred team winning by one point at the final buzzer. Vignette length was approximately 415 words.

### *Measures*

In addition to enjoyment ( $\alpha = .95$ ) and suspense, which were measured as in study 1 (although the latter was adjusted to the current context), the following scales were used in study 2. All items were measured on seven-point scales. Affective dispositions in the form of team identification and respondent sex were included as covariates.

*Relief.* Respondents indicated the extent to which they would feel each of the following emotions (*not at all/a great deal*) after watching the game described in the vignette: relief, disappointment, surprise, anger, and delight. The additional items were included to disguise the purpose of the study.

*Expectation Disconfirmation.* Using a scale adapted from Tse and Wilson (1988), respondents were first asked “Overall, how close did the game’s outcome come to meeting your expectations?” They then answered along a single dimension ranging from “*much worse than I expected*” to “*much better than I expected*” with the midpoint being “*about as expected*”.

*Affective Dispositions.* Affective disposition toward the respondents’ own school’s team was operationalized using a six-item organizational identification scale (Mael & Ashford, 1992). Items were modified to reflect identification with the school’s team and each was rated along a *strongly disagree/strongly agree* scale ( $\alpha = .91$ ). Prior to this scale, respondents were asked to indicate which of the teams they preferred. All respondents selected their own school’s team.

*Additional manipulation-check items.* Immediately after exposure to the stimulus, respondents were asked which team won. All answered correctly. Next, fan avidity for each

competitor was assessed along a *strongly disagree/strongly agree* scale in response to the following stem: “I am a fan of (team name)”. Significantly greater avidity toward respondents’ own school’s team ( $M = 5.19$ ,  $SD = 1.80$ ) was found than for the opponent ( $M = 2.16$ ,  $SD = 1.79$ ), paired  $t(107) = 10.78$ ,  $p < .001$ .

### *Results*

The hypotheses for relief and enjoyment were tested using separate hierarchical multiple regressions. The first model entry for each criterion included sex and affective disposition toward the team. These were included as covariates because a preliminary analysis conducted across all conditions indicated that women (vs. men) (a) found the game to be more suspenseful ( $M_{\text{women}} = 4.82$ ,  $M_{\text{men}} = 3.97$ ;  $SDs = 1.51, 1.73$ , respectively),  $t(106) = -2.72$ ,  $p = .008$ , and (b) judged team performance to be better than expected ( $M_{\text{women}} = 5.30$ ,  $M_{\text{men}} = 4.50$ ;  $SDs = 1.02, 1.25$ ),  $t(106) = -3.62$ ,  $p < .001$ . The preliminary analysis also indicated that team identification was positively related to relief ( $r = .46$ ,  $p < .001$ ), suspense ( $r = .28$ ,  $p = .002$ ), and expectation disconfirmation ( $r = .25$ ,  $p = .005$ ). After accounting for these covariates, the second entry into the model for each criterion was the two dummy-coded manipulation factors: Game Competitiveness and Expectation. In step 3, the subjective measures of perceived suspense and expectation disconfirmation were added to the model.

To test the fourth and fifth hypotheses, a separate model was specified with enjoyment as the criterion. To test for H4, we expect that perceived suspense and expectation disconfirmation will each significantly predict enjoyment after accounting for effects attributable to the covariates and manipulated factors. The test of mediation (H5) involved specifying a model in which all previous predictors (including perceived suspense and expectation disconfirmation) were included in the model and then adding relief alone as the final entry into the hierarchical

regression model. Evidence of mediation exists if the effect of relief is significant and the previously significant effects for perceived suspense and expectation disconfirmation are substantially reduced or cease to be significant (Baron & Kenny, 1986). Prior to the tests using regression, separate analyses revealed that the Expectation  $\times$  Game Competitiveness interaction was not significantly related to either relief or enjoyment, and it was therefore not included in the regression models. Descriptive statistics are shown in table 1.

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 Insert table 1 about here  
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*Manipulation Checks.* Groups were compared using *t*-tests on the (a) certainty measure administered immediately after the first portion of the vignette, (b) expectation disconfirmation, and (c) suspense. As anticipated, those primed to expect a win (vs. loss) were more certain that the preferred team would win ( $M_{\text{win}} = 79.08$ ,  $M_{\text{loss}} = 49.87$ ;  $SDs = 16.07, 24.05$ ),  $t(106) = 7.39$ ,  $p < .001$ . Likewise, for expectation disconfirmation, the preferred team was thought to have done significantly better than expected following a win for those expecting a loss ( $M = 5.27$ ,  $SD = 1.04$ ) compared to a win ( $M = 4.45$ ;  $SD = 1.23$ ),  $t(106) = 3.73$ ,  $p < .001$ . As expected, suspense did not vary by Expectation ( $p = .30$ ). Consistent with the Game Competitiveness manipulation, those reading the high (vs. low) uncertainty vignette perceived greater suspense ( $M_{\text{high}} = 5.14$ ,  $M_{\text{low}} = 3.67$ ;  $SDs = 1.44, 1.57$ ),  $t(106) = 5.04$ ,  $p < .001$ . No expectation disconfirmation ( $p = .05$ ) or certainty ( $p = .875$ ) differences were found for the Game Competitiveness manipulation.

*Test of H3: Relief.* Table 2 shows the results of the hierarchical regression for relief. The variable set entered at each step of the model was significant and the overall model accounted for 37% of the variance in relief. Consistent with H3a, those led to believe they would read about a more (vs. less) competitive game felt greater relief ( $M_{\text{more}} = 5.43$ ,  $M_{\text{less}} = 4.51$ ;  $SDs = 1.43, 1.65$ ).

The results also support H3b in that those informed that their team would probably lose (vs. win) were more relieved when that expectation was disconfirmed ( $M_{\text{lose}} = 5.24$ ,  $M_{\text{win}} = 4.64$ ;  $SDs = 1.48, 1.70$ ). In addition, for the measured variables, relief was positively predicted both by suspense (H3c) and expectation disconfirmation (H3d). Greater relief resulted from increased levels of suspense and when the team did better than expected.

*Test of H4: Enjoyment.* Table 2 also features the results for enjoyment. As with relief, a significant effect was observed with the addition of each new variable set beyond that explained by those already included in the model. In total, the predictors explained 41% of the variance in enjoyment. As hypothesized, the initial entry of the manipulations indicated that respondents who saw a more (vs. less) competitive game felt greater enjoyment ( $M_{\text{more}} = 5.83$ ,  $M_{\text{less}} = 5.32$ ;  $SDs = 1.48, 1.29$ ; H4a) and those expecting a loss (vs. win) felt more enjoyment ( $M_{\text{loss}} = 5.80$ ,  $M_{\text{win}} = 5.31$ ;  $SDs = 1.53, 1.25$ ; H4b). In addition, as hypothesized, perceived suspense (H4c) and expectation disconfirmation (H4d) were each positively related to enjoyment.

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 Insert table 2 about here  
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*Test of H5: Mediation.* The biggest contributor to enjoyment was relief ( $p < .001$ ), whose entry explained an additional 10% of the variance in enjoyment. Of particular interest, however, is the test for mediation. As noted in Step 4, the previously significant effects found for suspense ( $p = .041$ ) and expectation disconfirmation ( $p = .007$ ) were reduced substantially in the presence of relief ( $p_{\text{suspense}} = .297$ ,  $p_{\text{disconfirmation}} = .072$ ). Thus, as posited in H5, relief mediates the direct effect of suspense and expectation disconfirmation on enjoyment.

### *Discussion*

In summary, the results of study 2 indicate that relief and enjoyment were each positively predicted by game competitiveness and pregame expectations, as well as by perceived level of suspense and disconfirmed negative expectations (i.e., the team did better than expected). In addition, relief predicted enjoyment. Of particular interest, however, was the mediation of suspense and expectation disconfirmation on enjoyment by relief. This finding indicates that the direct effect of suspense intensity and the disconfirmation of expectations is reduced in the presence of relief.

Although further aiding our understanding of relief following suspense, study 2 suffered from three limitations. As in study 1, affective dispositions were not explicitly manipulated and undesirable outcomes were not considered. Both of these possibilities are explored in our next study, again using a competitive event context. A third problem was the use of a vignette. Although the manipulation of suspense using this methodology did contribute to differences in relief and enjoyment, it would be better to include stimuli that more closely mimic an actual competition as it unfolds. Thus, suspense intensity is manipulated in real time in study 3.

### Study 3

As in our earlier studies, outcome uncertainty is again considered in study 3. Different from study 2 where the stimulus was a single game, stimuli used in study 3 are a set of computer-animated races. Also different from our earlier studies is the consideration of two additional factors. First, we investigate effects stemming from both favorable and unfavorable outcomes. Second, we consider affective dispositions, which allow us to pit preferred competitors against archrivals. Disposition theory suggests that enjoyment from seeing a win increases the more a competitor is liked and decreases the more a competitor is disliked (Raney, 2003b). A corollary of this is that enjoyment following a loss is enhanced as negative dispositions toward a

competitor increase, and enjoyment decreases following a loss as affective dispositions toward a competitor become more positive. Research has shown that highly competitive games won by a favorite team elicit greater enjoyment than lopsided wins (Bryant et al., 1994).

Enjoyment is again conceptualized as an evaluative attitude of the overall experience. We expect that maximal enjoyment will occur following a high-suspense win by a preferred competitor. It also follows that high-suspense races will be more enjoyable to watch than low-suspense races regardless of outcome because of their inherent entertainment value. Less straightforward in regard to high-suspense races is whether seeing an archrival lose will generate greater enjoyment than seeing an archrival win as would be predicted by disposition theory. The reason for this is due to the inherent competitiveness of high-suspense races, which should be more enjoyable simply because they are more engaging. Assuming this is true, enjoyment differences following a high-suspense win or loss by an archrival may be minimal. Thus, we offer only the most defensible hypothesis by positing that, compared to all other conditions, enjoyment will be greatest for those seeing a favorite competitor win a high-suspense race.

H6: Enjoyment will be greatest following high-suspense races won by a preferred competitor.

The combined effects of disposition theory and excitation transfer would suggest that relief will be greater at higher (vs. lower) levels of suspense following a desirable outcome. The heightened levels of empathetic distress associated with the prospects of not seeing a desirable outcome increases arousal, which is then transferred to subsequent emotional reactions once the outcome becomes known. It is the positive disconfirmation of these prospects at higher levels of arousal that enhance the strength of the response. Thus, we posit a three-way interaction.



H7: Relief will be greater following a high- (vs. low-) suspense (a) win (vs. loss) by a preferred competitor and (b) loss (vs. win) by an archrival.

As in study 2, we expect that relief will act as an affective pathway bridging suspense intensity to enjoyment. However, this should only be the case when the outcome is unambiguously favorable. Thus, consistent with disposition theory, relief should mediate the direct effect of suspense on enjoyment following either a win by a preferred competitor or a loss by an archrival. The reason for this is that relief is active only when the prospects of an undesirable outcome are disconfirmed, resulting in a desirable outcome (i.e., disconfirmation of prospective loss by a preferred competitor or win by an archrival). No such effect is expected following an undesirable outcome.

H8: Moderated mediation is expected such that relief will mediate the direct effect of suspense on enjoyment in (a) races won by a preferred competitor and (b) races lost by an archrival.

### *Method*

#### *Participants and Procedure*

Data were collected from 46 undergraduates (71% male) who were evenly dispersed across the two Affective Disposition conditions (i.e., preferred vs. neutral, and archrival vs. neutral). Each respondent saw 14 simulated races, half of which ended in a win by the preferred (or neutral) competitor, and the other half ending in a loss. Races were presented in sets of four (two in the final set) with an unrelated filler task that took approximately four minutes placed between sets. Sets and race order within sets were varied.

The fourteen simulated races that were created featured the icons of two college mascots racing along a horizontal line on a computer screen anchored at opposite ends by the words

“start” and “finish”. Mascot icons were selected because people have strong affinities toward university sports teams (Zillmann, Bryant, & Sapolsky, 1989). The winning icon crossed the finish line in exactly 21 seconds. Competitiveness was determined by the time differential between icons during the race, the trend (e.g., widening vs. narrowing) of the differentials, lead changes, and the distance between icons at the finish. The races were represented by seven unique patterns, four featuring a lead change and three that did not. Based on pretests, races with lead changes were perceived as being more suspenseful. Race outcome was also manipulated. To ensure the total variance in differentials for each outcome was equal, a loss for a given pattern was represented as the mirror image of a win for the same pattern (a description of the patterns and results of a pretest are not presented due to space constraints but are available upon request).

Each race included a pair of competitors in which a neutral opponent (i.e., a mascot icon for a school from a geographically distant athletic conference) raced either a preferred competitor icon (i.e., a mascot from the respondents’ own school) or an archrival icon (i.e., a major instate rival of the preferred competitor). This design was selected over one matching an archrival with a preferred competitor because it allows for a more nuanced test of affective disposition effects. For example, pitting a preferred competitor against an archrival would confound manipulated suspense with outcome such that it would be impossible to disentangle that percentage of variance in enjoyment explained by suspense from that attributable to competitor liking. By contrast, having each compete against a common neutral opponent makes it possible for outcome comparisons to be made across disposition groups that control for suspense and outcome.

### *Measures*

After each race, respondents completed the same scales used in study 2 to assess fan avidity, enjoyment, suspense, relief, and disappointment. As before, relief and disappointment were included among a list of other emotions. In addition, all respondents correctly answered a manipulation check asking which of the mascot icons won each race. Finally, the same fan avidity item used earlier was included as a measure of affective disposition toward each competitor. The Cronbach alpha for enjoyment across the races ranged from .95 to .98 ( $M = .97$ ). A Cronbach alpha coefficient was also calculated for each of the individual measures across races (e.g., alpha for relief was based on scores on that item across all 14 races). The alpha coefficients for relief, disappointment, and suspense were, respectively, .80, .72, and .87. Preliminary analyses revealed no significant effects related to respondent sex and it was therefore dropped from further consideration.

### *Results*

*Manipulation Checks.* Compared to the neutral competitor, fan avidity was greater for the preferred competitor ( $M_{\text{preferred}} = 6.83$ ,  $M_{\text{neutral}} = 1.36$ ;  $SDs = .49, .94$ ; paired  $t(22) = 21.07$ ,  $p < .001$ ), but not different than that for the archrival ( $M_{\text{archrival}} = 2.04$ ,  $M_{\text{neutral}} = 2.43$ ;  $SDs = 1.67, 1.73$ ; paired  $t(22) = -.74$ ,  $p = .470$ ). Thus, respondents were more favorably disposed toward their own school's mascot than to either of the other mascots. Descriptive statistics across conditions are shown in table 3.

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 Insert table 3 about here  
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To test the effectiveness of the manipulations, an Affective Dispositions (preferred vs. neutral, archrival vs. neutral)  $\times$  Outcome (win, loss)  $\times$  Race Type (seven patterns) mixed design was conducted with suspense as the criterion. Affective Dispositions was a between-subjects

factor, and the others were within subjects. The results yielded a main effect for Race Type,  $F(6, 39) = 40.82, p < .001, \eta_p^2 = .86$ . Post hoc comparisons indicated that the four patterns featuring lead changes were each perceived as being more suspenseful than those that did not (all  $ps < .02$ ). No interactions involving Affective Dispositions were observed (all  $ps > .24$ ). Given the differences for races featuring lead changes and to enhance interpretability, the seven levels of Race Type were replaced by a two-level Suspense factor in all subsequent analyses. Races featuring a lead change were classified as high suspense and those that did not were considered low suspense.

*Test of H6: Enjoyment.* Planned contrasts were conducted in order to test H6. The mean enjoyment score for those in the high-suspense preferred wins condition was compared to each of the other conditions using  $t$ -tests. The results support H6 in that mean enjoyment for this group ( $M = 5.84, SD = 1.03$ ) was significantly greater than the corresponding score in any of the other conditions (all  $ps < .014$ ).

As noted in our introduction of H6, we were unsure of any possible interactions that may exist for enjoyment. Thus, in addition to testing H6, we conducted an exploratory analysis specifying an Affective Dispositions (preferred vs. neutral, archrival vs. neutral)  $\times$  Outcome (win, loss)  $\times$  Suspense (low, high) mixed design with enjoyment as the criterion. The latter two factors were repeated measures and Affective Dispositions was between subjects. The results yielded a main effect for Outcome ( $p < .001$ ), but it was moderated by its interaction with Affective Dispositions,  $F(1, 44) = 14.57, p < .001, \eta_p^2 = .25$ . Regardless of suspense, mean enjoyment for races involving a preferred competitor was greater following wins ( $M_{\text{wins}} = 5.15, M_{\text{loss}} = 4.16; SDs = .97, 1.03; p < .001; \eta_p^2 = .37$ ), but no such outcome difference was found for races featuring an archrival ( $p = .72$ ). Also significant was the main effect for Suspense,  $F(1, 44)$

= 127.30,  $p < .001$ ,  $\eta_p^2 = .74$ . Races higher in suspense generated greater enjoyment ( $M_{\text{high susp}} = 4.92$ ,  $M_{\text{low susp}} = 3.36$ ; SDs = 1.24, .95). No other effects were observed (all  $ps > .06$ ).

*Test of H7: Relief.* To test H7, an Affective Dispositions  $\times$  Outcome  $\times$  Suspense mixed design analysis was conducted with the latter two factors being within subjects. As outlined in H7a and H7b, a three-way interaction was observed for relief,  $F(1, 44) = 17.08$ ,  $p < .001$ ,  $\eta_p^2 = .28$ . Greater relief was elicited at higher ( $M = 5.91$ ,  $SD = .78$ ) versus lower ( $M = 4.26$ ,  $SD = 1.13$ ) levels of suspense following races won by a preferred competitor,  $p < .001$ ,  $\eta_p^2 = .49$ . Similarly, mean relief was greater following races lost by an archrival under conditions of high suspense ( $M_{\text{high susp}} = 3.42$ ,  $M_{\text{low susp}} = 2.68$ ; SDs = 1.82, 1.39, respectively;  $p < .001$ ,  $\eta_p^2 = .30$ ).

*Test of H8: Moderated Mediation.* Given that each participant provided both win and loss data, the data were not independent. Thus, simultaneous mediation models using LISREL 8.8 were estimated for the two Affective Disposition pairings (i.e., preferred vs. neutral; archrival vs. neutral). Given the possibility of an undesirable outcome in study 3, disappointment was included along with relief when testing for moderated mediation. Disappointment is part of the same nomological network as relief in that it is also a disconfirmation emotion (Ortony et al., 1988). However, rather than resulting from the disconfirmation of an expected undesirable outcome, disappointment occurs when an expected desirable outcome is disconfirmed.

Including disappointment also offers a statistical advantage because it yields sufficient degrees of freedom to compare competing models (see Iacobucci, Saldanha, & Deng, 2007). Without disappointment, the alternative models would be just identified, meaning that all degrees of freedom are used up when the mediation paths are specified. This would mean that the directionality of the specified paths is empirically indeterminate. We do not expect a direct effect of disappointment on enjoyment because it is possible to enjoy a suspenseful race despite an

undesirable outcome. Consistent with our conceptualization, enjoyment is an evaluative response to the overall experience rather than a response to the outcome.

Data were organized according to Affective Dispositions and Outcome (see figure 2). Suspense was represented as a dichotomous factor (1 = low-suspense races, 2 = high-suspense races). Input data to the structural equation model were respondents' mean scores on disappointment, relief, and enjoyment for a given affective disposition pairing, aggregated by race outcome. For example, the "Preferred Wins Relief" variable in figure 2 represents the mean score for relief across all races in which the preferred icon beat the neutral opponent. Although each Affective Disposition condition included 23 respondents, each person contributed both win and loss data for a total of 46 data points. Iacobucci et al. (2007) have provided evidence that structural equation modeling is preferred when sample size is small. Nevertheless, to enhance reliability, parameter estimates were computed based on 5000 bootstrapped resamples.

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 Insert figure 2 about here  
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Hypothesis 8 predicts moderated mediation such that relief will mediate the effect of suspense on enjoyment following a desirable outcome (i.e., a win by a preferred competitor or a loss by an archrival). As per Preacher, Rucker, and Hayes (2007), the model shown in figure 2 specifies a direct effect of suspense on each of the other factors by race outcome. Also shown are direct effects from the disconfirmation emotions to enjoyment for each outcome. Simultaneous effects were estimated for this model in each of the affective disposition conditions.

Table 4 features maximum likelihood estimates and associated critical ratios for the specified paths. The table is organized according to desirable and undesirable outcomes. The top half of the table shows the results for both types of desirable outcome (i.e., preferred wins and

archrival loses). The bottom half of table shows the results for undesirable outcomes. A between-subjects chi-square difference test is also reported comparing the path of the preferred competitor condition to that of the archrival condition. So, the  $\Delta\chi^2$  value of 2.72 ( $p < .01$ ) for Suspense  $\rightarrow$  Relief indicates that the effect of suspense on relief was significantly greater for those in the preferred competitor wins conditions than for those in the archrival-loses group.

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 Insert table 4 about here  
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Sobel Z-tests were conducted to test for moderated mediation in each of the desirable outcome conditions. As predicted in H8a, the indirect effect of Suspense on Enjoyment through Relief was significant for those in the preferred-wins condition ( $Z = 2.63, p = .009$ ) and the variance accounted for (VAF) by the indirect relationship was 54%. However, in contrast to H8b, an indirect effect was not found in the archrival-loses condition ( $Z = 1.50, p = .130, VAF = .26$ ). As shown in table 4, the difference in mediation between the two affective disposition conditions was due to the significant Suspense  $\rightarrow$  Relief effect found in the preferred-wins group (C.R. = 5.83,  $p < .001$ ) compared to a non-significant effect for this path in the archrival-loses condition (C.R. = 1.55,  $p = .121$ ).

Also shown in table 4 is a non-significant Suspense  $\rightarrow$  Enjoyment path in the preferred-wins condition (C.R. = 1.62,  $p = .105$ ). In contrast, suspense was a positive predictor of enjoyment in each of the other conditions, regardless of outcome desirability (C.R.  $> 3.43, p < .001$ ). To test whether mediation in the preferred-wins condition was partial or full, a model was specified in which Suspense  $\rightarrow$  Enjoyment was freed in the preferred-wins group and the direct Relief  $\rightarrow$  Enjoyment was fixed. The results yielded a highly significant Suspense  $\rightarrow$  Enjoyment

effect ( $C.R. = 4.25, p < .001$ ). It can therefore be concluded that full mediation was found in the hypothesized model for those in the preferred-wins condition.

Although no such effect has been suggested in the suspense literature, we nevertheless tested the possibility that disappointment mediates the Suspense  $\rightarrow$  Enjoyment path following an undesirable outcome. This was done because just as relief is affected by a disconfirmed expectation, so too might disappointment. Thus, disappointment may play a similar role as relief following a disconfirmed outcome. However, the results indicate that disappointment did not mediate the effect of suspense on enjoyment in either of the undesirable outcome conditions ( $Z_{\text{preferred-loses}} = .25, p = .806, VAF = .01$ ;  $Z_{\text{archival-wins}} = .51, p = .610, VAF = .03$ ).

Finally, we consider whether two alternative models might provide a better fit to the data (c.f. Iacobucci et al. 2007). The first, Model A, tests a sequence in which the position of relief and enjoyment in the hypothesized model is reversed. In Model B, the role of relief is switched with disappointment. Each of these models is compared to our hypothesized model for those exposed to a high-suspense win. To avoid the comparison of equivalent models, no direct path was specified from Suspense to the criterion in any of the models. Only data from the preferred-wins condition were included in testing the competing models. The hypothesized model yielded an excellent fit to the data,  $\chi^2(3) = 4.45, p = .44$ . This model also provided a superior fit to Model A which specified a Suspense  $\rightarrow$  Enjoyment  $\rightarrow$  Relief hierarchy,  $\chi^2(3) = 26.98, p < .001$ . The hypothesized model also outperformed Model B which featured a Suspense  $\rightarrow$  Disappointment  $\rightarrow$  Enjoyment sequence,  $\chi^2(3) = 23.28, p < .001$ . It can therefore be concluded that the hypothesized model was superior to either of the alternatives.

### *Discussion*



The results of study 3 provide compelling support for past theorizing (Frijda, 2007; Zillmann, 1996) regarding relief's ability to mediate the effect of suspense on enjoyment following an outcome benefitting a liked character. Interestingly, no such effect was found for the other desirable outcome considered here, losses by an archrival. The key difference between these two levels of desirable outcomes was the increased levels of relief associated with higher levels of suspense following a preferred competitor's wins. In addition, disappointment did not play a mediating role in the case of undesirable outcomes.

### General Discussion

Suspense represents a paradox as a motive for enjoyment because it is experienced as a prolonged unpleasant state punctuated by periods of intense anxiety. A suggested reason for viewers' willingness to endure suspense is the extraordinary relief they feel following a desirable outcome. It has long been hypothesized but never empirically tested that relief mediates the impact of suspense on enjoyment following a desirable outcome. Our research addressed the factors contributing to relief and its relationship to enjoyment in three separate studies.

The results of our research suggest two points that advance the study of emotion in media effects research. The first implication is the importance of using discrete emotion measures. Suspense was conceptualized as the fearful apprehension that a desired outcome will not be forthcoming. Relief, operationalized as a distinct emotion in our studies, was defined as the disconfirmation of that expected undesirable outcome. Contrary to past research (Andrade & Cohen, 2007), the results of our first study indicate that relief acted more reliably in terms of theoretical consistency with observed effects than did more general valenced measures of affect. Also consistent with our conceptualization of relief as a disconfirmation emotion, relief was

activated in our first study only in the presence of an unambiguously favorable ending. Likewise, in our second study, expectation disconfirmation was positively related to relief.

A second point is the consideration of enjoyment in terms of integrated affective and cognitive elements. Although enjoyment was positively predicted by suspense intensity regardless of outcome and affective dispositions in study 3, this effect was fully mediated by relief in the preferred-wins condition. For those whose preferred competitor won, the indirect effect of suspense through relief accounted for 54% of the variance in enjoyment. Also worth noting is that enjoyment was itself greater in this condition than in any other. Interestingly, the key link in the mediation that distinguished the preferred-wins condition was the positive effect of suspense intensity on relief. The ability of relief to fully mediate the effect of suspense on enjoyment following an outcome by a preferred competitor was also found in study 2. The results of studies 2 and 3 suggest that the quality of enjoyment following an ending benefitting a liked character is largely due to the effect of suspense intensity on relief, not the direct effect of suspense on enjoyment. To a large extent, this relationship may underlie the “affective overreaction” described by Zillmann (1996) as the reason why viewers are drawn to suspense.

As with any study, it is important to note the limitations of the research. First, the stimuli used in our research were designed to manipulate key constructs so that hypothesized effects might be tested. Thus, they did not involve competitions between actual teams and/or athletes. In particular, the use of racing icons in study 3 may at first seem especially contrived and might lead one to wonder how “into it” respondents really were while watching. Our response to this is that it is not at all unusual for people to be highly engaged with computer-animated characters in a game setting. Beyond video games, one need only consider the recent phenomenon of Angry Birds. Angry Birds is a video game for mobile devices in which players use a slingshot to

launch computer-animated birds at pigs. That such games are involving is evidenced in the more than 50 million times Angry Birds has been downloaded and the fact that it is the number one selling paid app in the App Store (Lowe, 2011). Moreover, given the subtlety of the affective disposition stimuli used in our research, we would argue that the effects reported here would have been even more pronounced had real teams and athletes been featured. Unfortunately, had actual teams and athletes been used, our ability to manipulate key constructs (e.g., outcome, suspense level) would have been severely limited.

A second limitation was the use of single-item scales to assess relief and suspense. To our knowledge, no multiple-item scales exist for relief. Interestingly, relief has few, if any, appropriate synonyms (Lazarus, 1991; Ortony et al., 1988). Similarly, for the sake of parsimony and because it was used only as a manipulation check, a single-item scale was also used to assess suspense. To a certain extent, this shortcoming was addressed for both measures in study 3 by using mean emotion scores derived from multiple races and reporting their reliability coefficients. Moreover, recent research has shown that a single-item measure performs just as well as a multiple-item scale for clearly defined singular constructs (Bergkvist & Rossiter, 2007) and when respondents complete the same scales across multiple stimuli, as in our final study.

A comment on causality seems appropriate at this point. We proposed and tested a mediation model based on a theoretical ordering of constructs outlined by Zillmann (1996) and Frijda (2007). However, the present studies considered data that were collected concurrently. Thus, a third limitation of our research is that the data did not allow for a strict test of the causal nature of our model. Testing alternate models in study 3 aided in our account of the hypothesized ordering of constructs, but it did not provide proof of a causal sequence. One approach to testing for causality would be a longitudinal study in which data are collected at several points during

the experience. For example, rather than creating stimuli judged to vary in suspense post hoc, moment-to-moment measures of suspense would be one way to assess intensity during the actual sequence (e.g., Knobloch-Westerwick, David, Eastin, Tamborini, & Greenwood, 2009). Higher peaks of momentary suspense (especially toward the end of a sequence) should be related to relief following episodes ending in a desirable outcome.

Another area of future research that would be helpful in clarifying our findings is the inclusion of satisfaction with the outcome. The current research considered enjoyment as the endogenous variable in studies 2 and 3. Relief was linked to enjoyment, but disappointment had little effect on it. It would be useful for future research to consider satisfaction with the outcome as a mediator of the disconfirmation emotions' impact on enjoyment. In contrast to enjoyment, conceptualized here as an overall attitude of the experience, outcome satisfaction refers to a judgment about the desirability of an outcome.

Future research might also want to consider other entertainment contexts where relief may play an important role in predicting enjoyment. For example, like suspense, humor relies on miniature plots that feature conflicts and resolutions (Wyer & Collins, 1992). Moreover, disposition theory is also thought to feature prominently in humor (see King, 2003 for a review). Interestingly, humor is often added included in dramatic movies for purposes of comic relief (King, 2000). Thus, it would be interesting to test whether relief mediates the effect of varying levels of humor on enjoyment.

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Table 1

*Descriptive Statistics of Measures, Study 2 (N = 108)*

	Expect a Win, Uncertainty Pattern (n = 27)		Expect a Win, Certainty Pattern (n = 26)		Expect a Loss, Uncertainty Pattern (n = 24)		Expect a Loss, Certainty Pattern (n = 31)	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Certainty of a Win <sup>a</sup>	79.7	14.23	78.42	18.05	47.63	19.19	51.61	27.42
Perceived Suspense	5.19	1.30	3.15	1.69	5.08	1.61	4.10	1.35
Expectation Disconfirmation	4.19	1.27	4.73	1.15	5.13	.99	5.39	1.09
Relief	5.11	1.58	4.15	1.71	5.79	1.18	4.81	1.56
Enjoyment	5.64	1.28	4.96	1.70	6.03	1.29	5.62	1.21
Team Identification	4.84	1.38	4.79	1.70	4.77	1.46	4.75	1.16

<sup>a</sup> The certainty of win variable was collected immediately after the Expectation manipulation and prior to reading the Game Pattern description; scale range was 0 (no likelihood of winning) to 100 (certain likelihood of winning).

Table 2

*Hierarchical Regression of Relief and Enjoyment on Predictors, Study 2 (N = 108)*

Step	Predictors (Hypothesis & DV)	DV: Relief (H3)				DV: Enjoyment (H4 & H5)			
		Adj $R^2$	$F_{\text{cha}}$	Beta	$t$	Adj $R^2$	$F_{\text{cha}}$	Beta	$t$
1		.20	14.06**			.18	13.07**		
	Sex			.04	.45			-.02	-.23
	Affective Dispositions			.46	5.23**			.45	5.11**
2		.31	9.70**			.24	4.86**		
	Sex			.03	0.42			-.03	-.03
	Affective Dispositions			.46	5.56**			.45	5.31**
	Game Competitiveness Manip. (H3a Relief; H4a Enjoyment)			.30	3.70**			.19	2.21*
	Expectation Manip. (H3b Relief; H4b Enjoyment)			.21	2.66**			.20	2.36*
3		.37	6.20**			.30	5.47**		
	Sex			-.09	-1.09			-.15	-1.70
	Affective Dispositions			.34	4.04**			.34	3.79**
	Game Competitiveness Manip.			.22	2.51*			.14	1.02

Expectation Manip.	.11	1.31	.09	1.47
Suspense (H3c Relief; H4c Enjoyment)	.25	2.66**	.21	2.07*
Expectation Disconfirmation (H3d Relief; H4d Enjoyment)	.23	2.52*	.27	2.74**
4			.41	19.39**
Sex			-.11	-1.37
Affective Dispositions			.19	2.19*
Game Competitiveness Manip.			.04	.48
Expectation Manip.			.04	.53
Suspense (H5a Enjoyment)			.10	1.05
Expectation Disconfirmation (H5b Enjoyment)			.17	1.82
Relief (H5 Enjoyment)			.43	4.04**

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Note: Coding: DV = dependent variable; Sex (1 = male, 2 = female); Game Competitiveness Manipulation (1 = low uncertainty, 2 = high uncertainty); Expectation Manipulation (1 = Loss, 2 = Win)

\*p < .05, \*\*p < .01

Table 3

*Descriptive Statistics, Study 3 (N = 46)*

	Preferred Wins		Archrival Wins		Preferred Loses		Archrival Loses	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Suspense	4.90	1.53	4.30	1.67	4.66	1.45	4.16	1.64
Relief	5.09	1.27	3.20	1.59	2.09	.87	3.05	1.65
Disappointment	2.03	.91	2.91	1.55	5.60	1.03	2.77	1.54
Enjoyment	5.15	1.28	4.11	1.43	4.16	1.40	4.17	1.43

Table 4

*Test of Moderated Mediation, Study 3*

Outcome Type		Preferred Competitor			Archrival			$\Delta \chi^2^c$
		Race Outcome	ML(SE) <sup>a</sup>	C.R. <sup>b</sup>	Race Outcome	ML(SE) <sup>a</sup>	C.R. <sup>b</sup>	
Desirable Outcome	Suspense Pattern → Disappointment	Win	-.28(.26)	-1.07	Loss	-.86 (.43)*	-1.97	1.27
	<b>Suspense Pattern → Relief</b>		<b>1.65(.28)***</b>	5.83		<b>.73 (.47)</b>	1.55	<b>2.72**</b>
	<b>Suspense Pattern → Enjoyment</b>		<b>.61(.38)</b>	1.62		<b>.98 (.29)***</b>	3.43	.63
	Disappointment → Enjoyment		-.20(.16)	-1.23		-.18 (.09)*	-2.00	.01
	<b>Relief → Enjoyment</b>		<b>.44(.15)**</b>	2.95		<b>.47 (.08)***</b>	5.57	.04
Undesirable Outcome	Suspense Pattern → Disappointment	Loss	.39(.30)	1.30	Win	-.65 (.45)	-1.47	3.67***
	Suspense Pattern → Relief		.04(.26)	.14		.74 (.46)	1.63	1.80
	Suspense Pattern → Enjoyment		1.63(.33)***	4.90		1.36 (.33)***	4.10	.34
	Disappointment → Enjoyment		.04(.16)	.23		-.06 (.11)	-.59	.22
	Relief → Enjoyment		.16(.19)	.87		.30 (.10)**	2.93	.32

Note: Suspense Pattern (1 = low-suspense races, 2 = high-suspense races). Bold paths represent hypothesized mediation.

a ML represents the maximum likelihood estimate for the unconstrained path. The value given in parenthesis is the standard error term.

b C.R. represents the critical value for statistical significance of the ML estimate. Values of 1.96 are significant at  $p < .05$ , values of 2.58 are significant at  $p < .01$ , and values greater than 3.30 are significant at  $p < .001$

c  $\Delta \chi^2$  represents the change in chi square associated with constraining the path in that of the Preferred Competitor condition with that of the Archival condition.

\* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$

Figure 1  
Pre-Duel vs. Post-Duel Emotion Differences by Outcome Condition. Study 1 (N = 58)

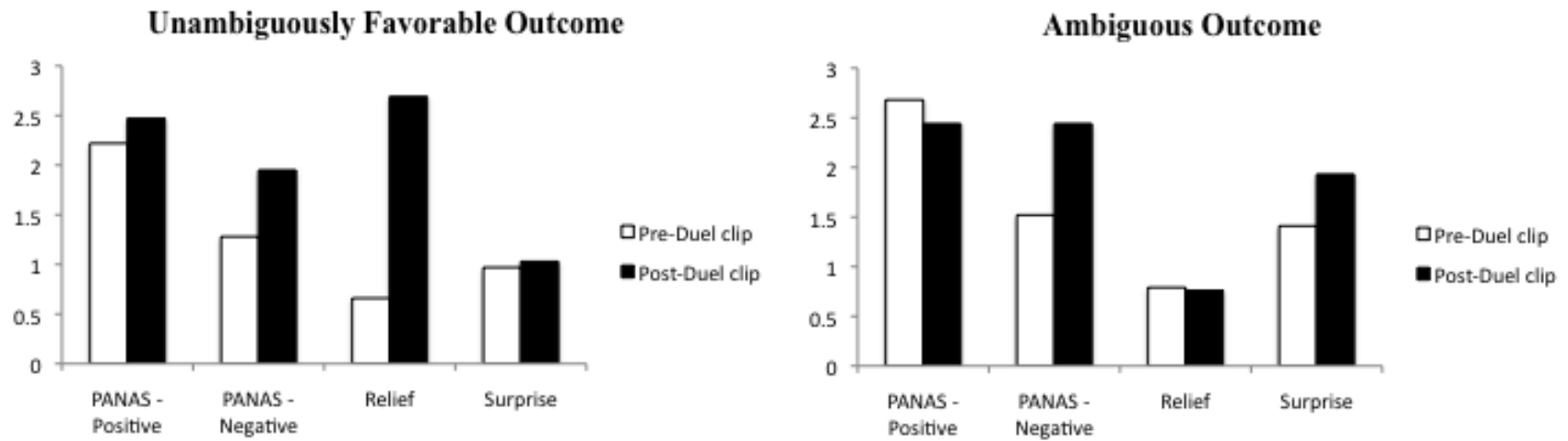
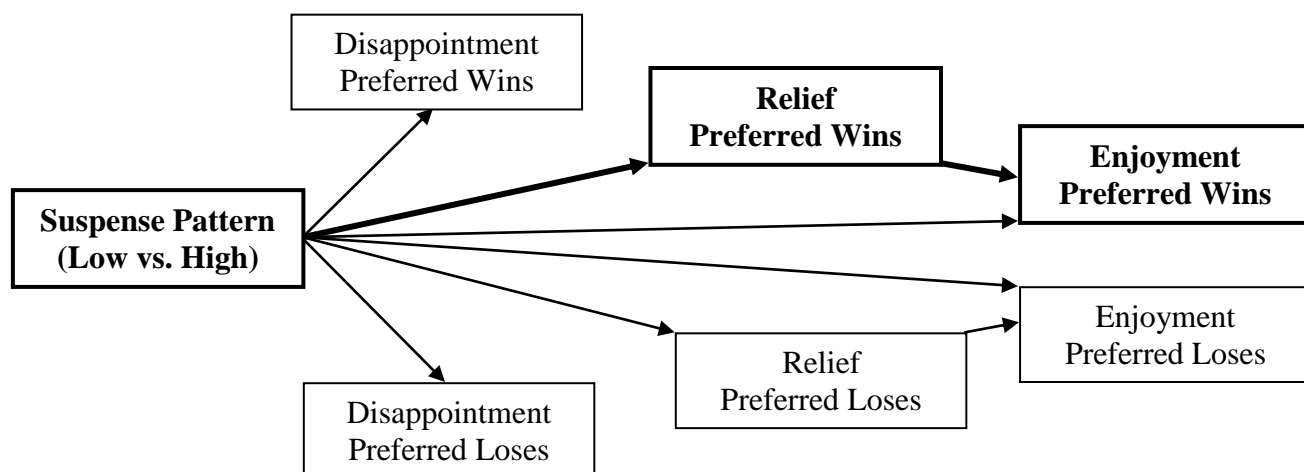
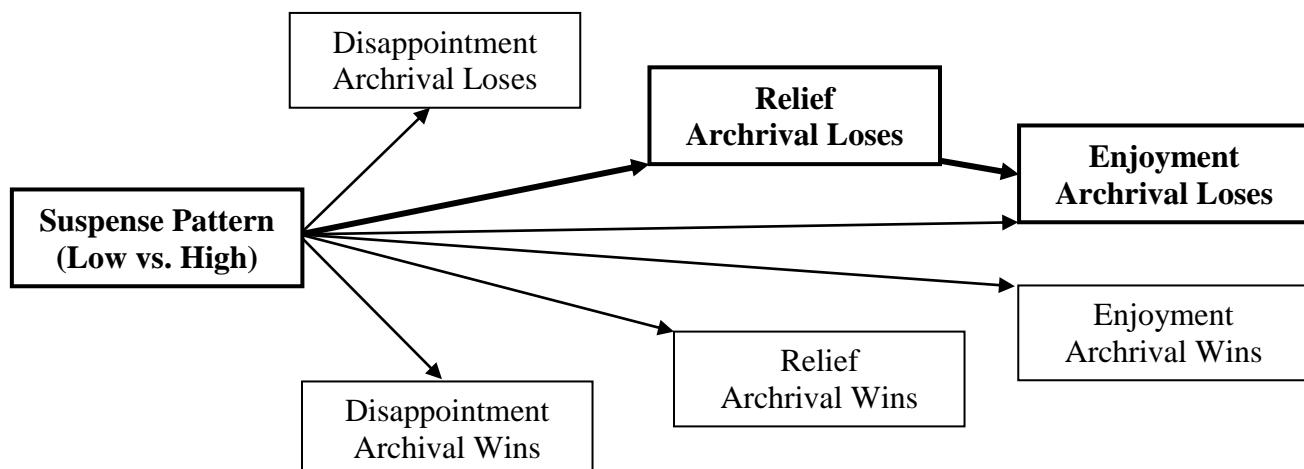


Figure 2  
Models Tested by Outcome Group, Study 3

Preferred vs. Neutral



Archival vs. Neutral



Note: Bold paths represent hypothesized mediation. Suspense Pattern (1=low suspense races, 2=high suspense races)